

Application Guide for Mobile Waste Characterization System Components in Support of the Mobile Operations Authorization Basis

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Chapter 1

Mobile Characterization Unit (MCU)

Basis for Interim Operation

1.1 Scope

This Application Guide provides instructions for use of Waste Isolation Pilot Plant (WIPP) Central Characterization Project (CCP) Mobile Waste Characterization System (MWCS) components at Department of Energy (DOE) sites. By meeting the requirements specified in the Mobile Characterization Unit (MCU) Basis for Interim Operation (BIO) and the criteria in this document, the MCU can be used without developing additional analysis. The provisions of this guide can be applied at all DOE sites where MWCS components are to be located (host sites).

Nothing in this application guide is intended to limit the application of other safety analysis documents when unique situations or hazards warrant an alternative approach. The alternative approach should include an equivalent level of safety to that achieved by conforming with this guide. Sites that have already developed Documented Safety Analyses (DSAs) for the use of the MWCS are allowed to use those documents developed and approved. The MCU BIO, however, may be applied in future applications if desired.

This Application Guide also provides a template for the DOE Site Manager to authorize use of the MCU BIO at the host site.

1.2 Purpose

The BIO establishes an umbrella safety basis for use of the MCU. This Application Guide provides a series of checklists to adapt the safety analysis to a specific site and aid in the deployment of MWCS components. If the requirements of the MCU and this Guide are met, no additional analysis, review or approval is required to operate the MWCS units. The DOE Site Manager or Approval Authority approves the application of the BIO by letter and confirms readiness using the checklists provided.

The use of MWCS components has the potential to require revision to existing or development of new safety basis documents to allow the placement and operation of the MWCS on the host site. This Application Guide has been developed to help the host site minimize the time and resources required to adapt the generic safety basis developed to support waste characterization activities. Application of the BIO in accordance with this guide should allow a site to efficiently identify the key attributes, restraints and site preparation required to safely operate the MCU. Once the requirements of the MCU BIO and this Application Guide are satisfied, the Site Manager will authorize use of the MCU BIO through a letter of direction. After implementation, the site will verify readiness prior to start of characterization activities. The process is illustrated in Figure 1.

This Application Guide captures lessons learned from user sites to ensure information is incorporated into the MCU BIO.

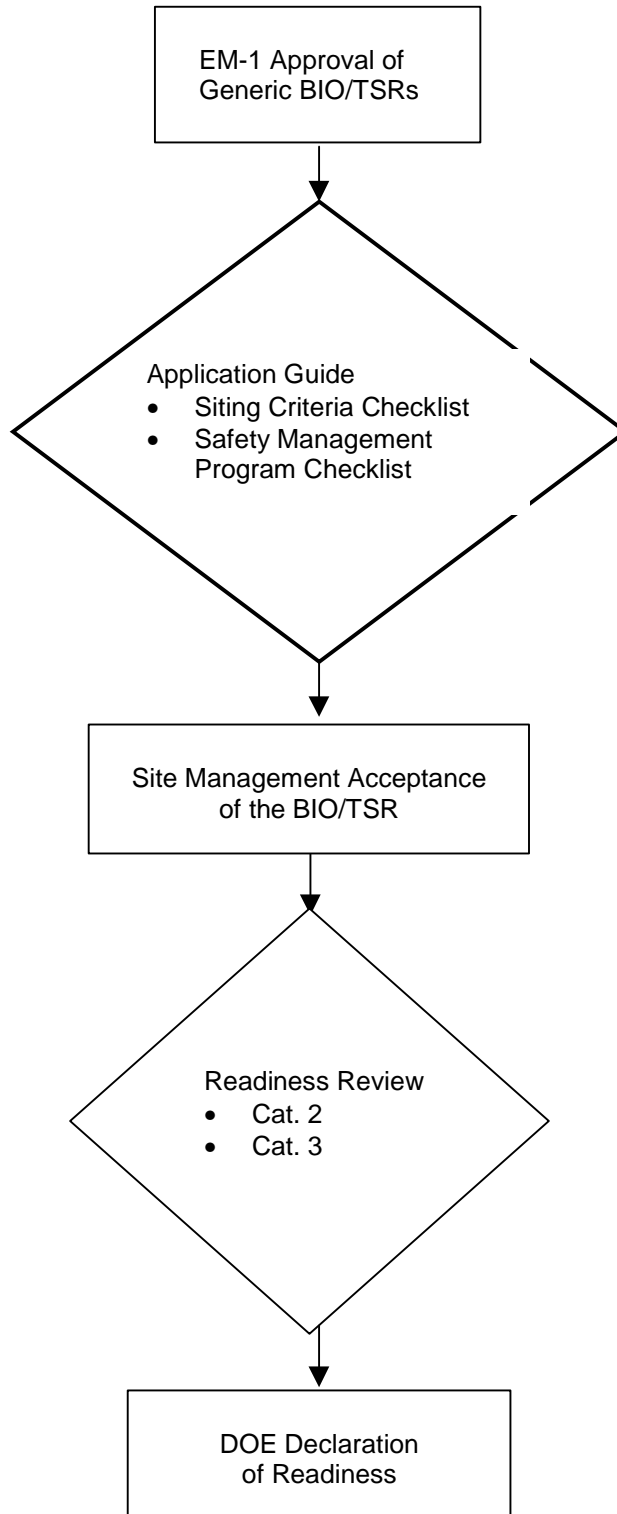


Figure 1. Process for Verifying Readiness Prior to Start of Characterization Activities.

1.3 Applicable Criteria

The requirements and criteria for this Application Guide are taken from the following source documents:

- 10 CFR 830, *Nuclear Safety Management*
- DOE STD 1027-92, *Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports*
- DOE STD 3011-2002, *Guidance for Preparation of Basis for Interim Operation (BIO) Documents*
- DOE STD 3010-94, *Airborne Release Fractions/Rates and Respirable Fractions for Nonreactor Nuclear Facilities*
- DOE Order 425.1C, *Startup and Restart of Nuclear Facilities*
- DOE Order 435.1, *Radioactive Waste Management*
- DOE Order 440.1A, *Environmental Protection, Safety and Health Protection Standards*
- CAO-94-1012, U.S. Department of Energy, Carlsbad Area Office Quality Assurance Program Document (QAPD)
- NM 4890139088, Waste Isolation Pilot Plant Hazardous Waste Facility Permit, Santa Fe, New Mexico Environmental Department.
- DOE/WIPP-069, *Waste Acceptance Criteria for the Waste Isolation Pilot Plant (WAC)*

1.4 Acronyms and Abbreviations

AHJ	Authority Having Jurisdiction
AK	Acceptable Knowledge
ARF	Airborne Release Fraction
BIO	Basis for Interim Operation
CBFO	Carlsbad Field Office
CCP	Central Characterization Project
CFR	Code of Federal Regulations
DBA	Design Basis Accident
DOE	Department of Energy
DOT	Department of Transportation
DR	Damage Ratio
EBA	Evaluation Basis Accident
EG	Evaluation Guideline
ERPG	Emergency Response Planning Guideline
ES&H	Environment, Safety, and Health
FHE	Focused Hazard Evaluation
FMEA	Failure Modes and Effects Analysis
HAZOP	Hazard and Operability Analysis

HC	Hazard Category
HEPA	High Efficiency Particulate Air
IDLH	Immediate Danger to Life and Health
ISM	Integrated Safety Management
LLW	Low Level Waste
MAR	Material at Risk
MLLW	Mixed Low Level Waste
MCU	Mobile Characterization Unit
MWCS	Mobile Waste Characterization System
NDA	Non-Destructive Assay
NDE	Non-Destructive Examination
OR	Occurrence Report
OSHA	Occupational Safety and Health Administration
PC	Performance Category
PE-Ci	²³⁹ Pu-equivalent Curies
PHA	Process Hazard Analysis
POV	Privately Owned Vehicle
QAPD	Quality Assurance Program Document
RCRA	Resource Conservation and Recovery Act
RF	Respirable Fraction
RQ	Reportable Quantity
SC	Safety Class
SMP	Safety Management Program
SS	Safety Significant
SSC	Structure, System, or Component
ST	Source Term
SWB	Standard Waste Box
TEDE	Total Effective Dose Equivalent
TQ	Threshold Quantity
TRU	Transuranic
TSR	Technical Safety Requirement
TWMS	Total Waste Management System
UNH	Uranium Nitrate Hexahydrate
WAC	Waste Acceptance Criteria
WIPP	Waste Isolation Pilot Plant

1.5 General Description of the WIPP CCP

1.5.1 Description of Mobile Waste Characterization System

The CCP mobile facilities consist of CCP Characterization facilities and vendor-owned support facilities. The following processes are performed in facilities used for the characterization of TRU waste at a DOE site:

- Non-Destructive Examination
- Non-Destructive Assay
- Headspace Gas Analysis
- Visual Examination
- Mobile Loading Unit

The facilities that house the mobile equipment vary in size and shape. The characterization methods may also vary between the units (e.g., Headspace Gas processes may include Direct Canister Sampling versus Drum Venting, versus Needle Probe Sampling). The equipment achieves the same objectives and the hazards posed by each process or function is similar. The MCU BIO was developed to capture all units, by analyzing each function.

All CCP containers and semi-trailers are marked with a unique identification number. Process and system description documents describe all CCP containerized structures and semi-trailers in detail. Those that will be used by the site shall be specified in the DOE letter of approval. Unique controls or attributes that must be maintained for a given unit will be specified in the executive summary of the MCU BIO.

The analysis is based on a maximum Material at Risk (MAR) of 100 plutonium-239 equivalent curies (PE-Ci) in an area that can be affected by a single accident. (The PE-Ci unit describes the amount of radionuclides, in radiation dose equivalence, and hazard consequences normalized to given amount of Pu-239, Inhalation Class W [510 rem CEDE per μCi inhaled]).

MCUs may be grouped in a segment if inventory limits are maintained. The prescribed controls apply to each segment.

1.5.2 Statement of Work and Interface Document Between CCP and Site

The agreements between the site and CCP will be documented in Statement of Work (SOW). The SOW specifies requirements that the CCP must meet to operate at a site. The SOW represents a legal description (similar to a contract) that conveys the site or local requirements to CCP and becomes the regulatory agreement with CCP. The site will be similarly bound to provide the necessary utilities, programs, subject matter experts and oversight to foster the success of efficient mission operations. A template for the SOW is provided online at <ftp://q.wipp.carlsbad.nm.us/ControlledDocuments/>.

The Interface Document establishes the interfaces between the CCP and the site contractor for implementing services described in the SOW. Specifically, this document identifies the CCP and the site contractor responsibilities for implementing requirements and deliverables. The interface document is provided to clarify and expand on details contained in the upper tier SOW and program documents.

A template for the Interface Document is provided online at <ftp://q.wipp.carlsbad.nm.us/ControlledDocuments/>.

1.6 Assumptions and Conditions of Analysis

The BIO demonstrates that the MWCS components can be safely deployed at sites that have a minimum distance of 200 meters from the sited components to the site boundary or public. Each unit is considered a Hazard Category 2 nuclear segment limited to 100 PE-Ci each. For those facilities that need to stage, store or process waste containers in a fashion that would involve more than 100 PE-Ci in a single accident event, the site must revise the analysis to reflect the additional MAR. Those facilities that operate with less than 56 PE-Ci can be categorized as Hazard Category 3; however, the selected controls remain applicable.

The transportation and the WIPP WAC set limits on the amount of each isotope in a drum that can be shipped to WIPP. For Pu-238, the limit is based on wattage, which is a measurement of the heat generated by decay and generation of alpha particles. This wattage limit is based on the matrix, or type of material containing the waste. If the wattage is hydrogenated (i.e., paper and plastic are common waste items), the total drum wattage is limited to less than one watt to minimize hydrogen generation.

For Pu-239, the limit is dictated by criticality concerns and is less than 200 fissile grams equivalent (FGE). Limits for other radionuclides are based on Pu-239 “equivalency” and are given in units of plutonium-239 equivalent curies (PE-Ci). This unit describes the amount of radionuclides, in radiation dose equivalence, and hazard consequences normalized to given amount of Pu-239, Inhalation Class W (510 rem CEDE per μ Ci inhaled). WIPP Waste Acceptance Criteria (WAC) limits the radioactive inventory in a 55-gal drum to 80 PE-Ci.

Waste is packaged in DOT Type- A containers. The airborne release fraction/respirable fraction (ARF/RF) used for the generic analysis is conservatively selected as contaminated combustible solid material.

The BIO does not handle waste staging, waste transportation, or thermal conditioning activities that will take place at sites where MWCS components are deployed. These activities need to be considered for each individual site and depending upon the number of waste drums involved may likely be considered to be a Hazard Category 2 nuclear segment with MAR levels higher than those included in this evaluation. These may require additional reviews. Authorization for these activities may be included in existing authorization for storage and transport. Those facilities that do not have separate analysis may conduct staging and onsite transfer within the MAR limits prescribed by the MCU BIO.

The BIO demonstrates safety to on-site workers through adherence to Safety Management Programs (SMPs), which are sometimes referred to as *institutional safety programs*. The required SMPs are a combination of CCP SMPs developed for use by the vendor operators of the MWCS components and existing or developed site-specific SMPs. The implementation of key elements of the SMPs, or an equivalent program, is an inherent assumption of the analysis. The checklist provided in Attachment 2 lists those key features that support the safety analysis. These elements must be demonstrated by each site, or the effectiveness of a compensatory action must be completed. The DOE letter authorizing the use of the MCU BIO will also address specific deviations.

1.7 Site Selection for Mobile Waste Characterization System Deployment

The following section provides general siting criteria that must be met to apply the MCU BIO.

The MCUs must be adequately separated from other MCUs and facility structures or other equipment. The guidance provided in DOE-STD-1088-95 suggests that the MCUs should be positioned 20 ft apart end-to-end, and 20 ft apart side-to-side, or end-to-end 20 ft away from other structures.

DOE-STD-1088-95 provides general separation criteria and NFPA 80A provides criteria for siting the buildings outdoors. It should be noted that these spacing values assume that the fire department responds to fires. If no credible fire response team exists at the host site facility, the recommended distances must be evaluated by the Fire Protection Engineer, and are expected to increase.

Placement must consider the attached conveyors and the turning ratios for forklift operations (e.g., if a 5-ft conveyor is added to a structure and drums are loading at the end of the conveyor this could increase the spacing requirement by approximately 25 ft). Neighboring facilities that could interact with any one of the MCUs should be at least 20 ft away from any surface of the structure. Other constraints, e.g., neighboring explosives facilities, should be considered for adequate separation for safety.

MCUs should be placed such that emergency vehicles can access and operate to protect the MCUs and adjacent facilities or structures. Security or traffic control barriers should be designed in a manner that permits emergency access. Traffic around mobile characterization units must be controlled to preclude a potential for a catastrophic collision leading to a fuel pool fire. In addition, passive vehicle barriers provide protection against large vehicle accidents.

MCUs should not be located where they impede or otherwise hinder personnel movement between or within other facilities or structures.

MCUs should not be placed over control valves, access ways to underground utilities, utility corridors, gas mains, or water mains.

MCUs should not be placed beneath vital power lines or lines carrying over 600 volts, such that fire in the structure could damage the lines, or falling lines could initiate a fire. Such MCUs should also not be placed near or under other utilities that could be damaged from a fire in the MCU. Similarly, the MCU should not be placed near or beneath utilities or equipment with energy sufficient to initiate an event within the MCU, such as propane tanks, natural gas lines, steam lines, etc.

Diesel generators and diesel fuel tanks should be installed and separated from important structures per the requirements of NFPA 30. A minimum separation distance of 25 ft is required.

Adequate setup area for personnel access and loading/unloading clearances must be provided. Due to the sensitivity of some of the instrumentation it is preferable to place specific MCUs under a protective cover or inside an existing facility. MCUs should not be placed inside permanent facilities that do not have sprinklers unless a fire hazard analysis demonstrates that there is no significant increase in fire risk to the facility.

Site location(s) for MCUs should use appropriate methods of protection when wildland fire exposures present a significant fire risk.

DOE Order 420.1, Attachment 2.4.2.2.1 mandates that every facility have a reliable water supply of adequate capacity for fire suppression. Fire hydrants should be provided and installed in accordance with NFPA 24. Fire hydrants should be provided so that the needed fire flow can be delivered through hose lines to all exterior sides of any important structure. They should be spaced in accordance with the authority having jurisdiction.

In accordance with DOE-STD-1066-99, Section 6.2.5, hydrants should be provided so that hose runs from hydrants to all exterior portions of a protected building are no longer than 300 ft. Water can be supplied by pumper truck vehicles or alternate methods in remote locations.

Surface area for placement of the MCU should be level as possible. These MCUs should be placed on a hardened surface capable of maintaining dead load distribution (e.g., concrete, asphalt, compacted soil). Drainage around the MCU must be adequate to remove surface water away from the structure. The MCU should not be placed in an area prone to flooding.

Special placement considerations must be evaluated for the semi-trailer wheels and stabilizer jacks base on the dead load. In some cases steel plating or special fiberglass plates may be required depending on the surface. Footprint and weight of the unit can be found in the BIO for Mobile Operations.

Since the height of the mobile facilities is generally less than 50 ft (less than 13.5 feet in height), they may not be a lightning protection concern per DOE-STD-1066-99, Section 12.3. But the determination is significantly dependent on site-specific conditions. Section 12.3 of DOE-STD-1066-99 specifies that a lightning protection risk assessment be performed to determine the need for lightning protection for radiological facilities. NFPA 780 Appendix H provides a methodology to assess the risk of sustaining damage from a lightning strike. The risk categories range from "Light" to "Severe," and are calculated by selecting index values for the following criteria:

- Type of structure (use, area, and building height).
- Type of construction (structural framework and roof type).
- Suggested Structure Index Value.
- Suggested Construction Index Value.
- Relative location to other structures based on height and area.
- Topography (flat land, hillside, hilltop).
- Occupancy and contents.
- Suggested Occupancy Index Value.
- Lightning frequency isoceraunic level.

Final placement should be approved by the Authority Having Jurisdiction (AHJ).

Sites that experience wind speeds greater than PC2 evaluation basis winds as provided in DOE-STD-1020-2002 or equivalent must evaluate the need to tie the unit down to prevent the unit from becoming a missile that would affect other facilities.

Background radiation levels from adjacent storage areas or when using other NDE/NDA mobile trailers must be less than 2.5 mR/hr so as not to adversely effect the measurements taken in this trailer.

1.8 Safety Management Programs

Safety management programs address three major areas: (1) appropriate control of radiological and hazardous material hazards, (2) regulatory compliance with federal and state requirements, codes and standards, and standard industrial health and safety practices, and (3) good engineering and best management practices. In general, these programs are required and implemented on a site-wide basis to

assure the protection of workers, the public, and the environment; however, specific aspects require implementation on a facility-specific basis, such as the TRU Characterization Units.

- Prevention of Inadvertent Criticality
- Radiation Protection
- Hazardous Material Protection
- Radioactive and Hazardous Waste Management
- Initial Testing, In-Service Surveillance, and Maintenance
- Operational Safety, including Fire Protection Program
- Procedures and Training
- Quality Assurance
- Emergency Preparedness Program
- Provisions for Decontamination and Decommissioning
- Management, Organization, and Institutional Safety Provisions

The key elements of these programs are relied upon to assure that the conclusion of the safety analysis remains valid and are consistent with the description in Chapter 6 in the MCU BIO. Those sites that have approved DOE SMPs need only perform a gap analysis to ensure the programs implement and adequately monitor the key elements identified in Chapter 6. The site shall document the mapping to site specific procedures or programs in Attachment 2.

In the event a site does not have one or more of the specified programs, the site must evaluate the programs that are available to ensure that the key elements of the SMPs are implemented. If the site does not have a specified program, or an existing specified program does not include the requisite elements relied upon in the safety analysis, the host site is required to implement compensatory measures that provide equivalent protection. The site may also adjust the analysis if no reasonable compensatory measure can be established. For example, if a program such as Fire Protection cannot be demonstrated, the frequency of fire may be increased. Compensatory measures or revisions must be specifically approved by the DOE Approval Authority.

Attachment 2 provides a checklist to document evaluation of the SMPs.

1.9 Hazard Identification and Analysis

1.9.1 Hazard Categorization

The safety basis was developed to address the capacity of the MCUs at WIPP loading criteria. The evaluated case is Hazard Category 2, assuming 100 PE-Ci in Section 3.3.2.2 of the BIO. The control set presented in the BIO is developed to address this hazard. The typical drum loading is often below the limit and smaller sites with legacy waste handle limited quantities of drums (waste container) that are at a fraction of the loading limit. This analysis is therefore conservatively bounding. Sites may elect to impose an additional inventory control to restrict the MAR without further analysis. This may be appropriate for sites that have very little distance to the site boundary, noting that the expeditious removal of material may offset a temporary increase in the potential risk due to processing. This should be reflected in a revision to the TSR.

1.9.2 Hazards Analysis

In performing Process Hazard Reviews (PHRs) on waste characterization equipment operations, postulated accident events commonly include:

1. Dropping a 7A TRU waste drum from more a height of more than 4 ft
2. Fire in an MCU with the maximum inventory present
3. Fire and explosion from TRU waste drum contents

The site's Unreviewed Safety Question (USQ) process will be applied to operational activities. Positive USQDs and Discovery Issues require DOE notification and approval in accordance with site procedures. All positive USQDs will also be provided to the DOE Carlsbad Field Office (CBFO) to ensure that compensatory actions are appropriate and that the information is conveyed to users of similar units.

1.10 Other Considerations

1.10.1 Regulatory Restrictions

The MCUs are not considered new construction and do not require pre-construction approval per 40 CFR 61, Subpart H, Appendix D.

Because the characterization processes are mostly non-intrusive (e.g., TRU waste drum is not opened) there are no chemical or radiological air emissions. The non-intrusive process does not change the drum inventory contents because the process performs x-ray and drum assay from outside of the TRU waste drum during analysis. Therefore, the inventory of the drum remains the same with no physical change to the drums content. MCU activities are typically captured by existing site permits.

The site performs surveys of the drums for surface contamination before shipping to the characterization units. CCP ensures that the records are checked to verify that the surface contamination levels on the exterior surface of the drum do not exceed the limits for removable, total contamination, before acceptance.

1.10.2 Lessons Learned

This Application Guide will be periodically revised to reflect lessons learned through the use of the MCUs. Several sites contributed to the development of this document in hopes of capturing some of those already experienced. The CBFO will be responsible for soliciting input from user sites annually, unless a significant event warrants an immediate change.

1.10.3 Readiness Review

Per DOE Order 425.1C, a Readiness Review is required prior to startup of a new facility. This readiness review may be graded based on the complexity of the operation, personnel experience, and the similarity of the activity to activities currently performed by the site. The concept of an approved safety basis including use of same or similar sets of equipment that can be adopted at multiple sites carries with it the benefit of previous verification as well. Once the generic elements of implementation are verified, e.g. WIPP CCP operating procedures, operator qualification/certification process, and equipment functionality, are properly validated to be effective, these aspects of a readiness review need not be repeated at each site. They will be subject to routine audit, self-assessment requirements, in accordance

with the CBFO QA program. Similarly, if these facilities have been previously used, it may not be considered as an initial start up.

The host site is required to review those elements of the safety basis and infrastructure that interface with site requirements. For example, connections to site utility, site-specific training, and emergency response shall be within the scope of the review. A checklist has been provided in Attachment 3 as an example of a readiness review checklist.

The determination of the level and scope of Readiness Review and startup authority will be established considering the above factors in conjunction with the criteria in DOE O 421.1.C.

1.11 Bibliography

The following documents were consulted in the development of this Chapter, and are listed here as information resources for users of this Application Guide.

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ATTACHMENT 1

Siting Criteria Checklist

Mobile Characterization Unit Siting Criteria Checklist				
1	Meets minimum 200 m siting criteria or appropriate adjustment has been made to analysis/TSR.			
2	Unit located at least 20 ft from existing structures and at least 20 ft from other units/equipment	Yes	No	N/A
3	Spacing allows adequate room for conveyers and loading equipment			
4	Emergency access to MCU is not restricted			
5	Personnel egress is not restricted			
6	Security or traffic control barriers permit emergency access			
7	MCU is not placed over control valves, access ways to underground utilities, utilities corridors, gas mains or water mains			
8	MCU is not placed below high voltage lines or other high energy sources, or vital equipment			
9	Separation from diesel generator > 25 feet			
10	MCU inside facility - facility has fire protection			
11	Separation from fuel storage tanks > 25 feet			
12	Location protected from wildland fire exposure			
13	Adequate water supply for fire suppression is available			
14	Site is level and can hold weight of MCU			
15	Site is not prone to flooding			
16	Lightning protection installed			
17	Restraints required for high wind are installed			

ATTACHMENT 2

Safety Management Program Checklist

Safety Management Program Checklist					
		Yes	No	N/A	Imp. Doc.
1	Criticality Safety				
	Fissile inventory less than 200 FGE in a TRU waste drum				
2	Radiation Protection Program				
	Occupational Radiation Protection per 10 CFR 835				
	Occupational Radiation Protection ALARA Program				
	Radiological Safety Program for Radiation-Generating Devices				
	ALARA Program for Radiation Protection of the Public and the Environment				
3	Hazardous Material Protection				
4	Radioactive and Hazardous Waste Management				
	Container integrity				
	Packaging requirements				
	Compliance with Waste Acceptance Criteria				
5	Initial Testing, In-Service Surveillance and Maintenance				
	Interlock system check				
	Training personnel				
	Fire detection linked to dispatch				
6	Fire Protection Program				
	Reducing the potential for the occurrence of a fire or related event in the TRU characterization activities				
	Mitigating on-site or off-site releases of hazardous or radioactive materials from a fire				
	Providing an acceptable degree of life safety to the Site Contractor, CCP, subcontractor personnel, and the public from fire in the TRU characterization activities.				
	Ignition source control program				
	Combustible control program				
	Fire protection system surveillance and maintenance				
	Conduct of Operations				
	Conduct of Operations Applicability Matrix				
7	Procedures and Training				
	Procedures				
	CCP Training Implementation Matrix				
8	Quality Assurance				
	QAP				
9	Emergency Preparedness				
10	Management, Organization and Institutional Safety Provisions				

ATTACHMENT 3 READINESS REVIEW CHECKLIST

Readiness Review Checklist				
		Yes	No	N/A
1	Criteria			
	Siting Criteria Checklist Complete			
	SMP Checklist Complete			
	CCP Personnel Trained per Site Requirements			
	Distance to site boundary \geq 200 meters			
	Adjustment for MAR or distance to site boundary properly addressed			
2	Procedures Approved and Validated			
	CCP Operating Procedures			
	Site Operating/Surveillance Procedures			
	Procedures incorporate TSR controls			
	Personnel understand TSR controls and Recovery Actions			
3	Interface Document Identifies:			
	Roles and Responsibilities			
	Interface with Site SMPs			
4	Configuration Management process established			
5	USQ Evaluators Trained to BIO Requirements			
6	Waste Transfer Operation Adequately Demonstrated			
7	Emergency Response Drill Performed Successfully			
8	Waste Staging Area Established			
9	Additional Controls/Considerations			
	Conditions of approval identified in Safety Evaluation Report implemented			

APPENDIX 1

Sample letter Authorizing Application of the MCU BIO

From: *Site Manager*
To: *Site Contractor*

Subject: Approval of Use of the Mobile Characterization Unit Basis for Interim Operation for the Waste Characterization Treatment Facility

Reference: MCU BIO, dated August, 2003

I am approving the use of the subject safety basis document at the *site name*. The facility shall be operated as a Hazard Category __ (*insert 2 or 3*) non-reactor nuclear facility. The following deviations to the MCU BIO or Application Guide and appropriate compensatory measures are specifically included (list any deviations from siting criteria checklist or SMP checklist):

- *Deviations*
- *Deviations*
- The MCU will be located at a distance of _____ meters to the site boundary.
- State whichever units will be used.
- The site will comply with an inventory limit of 100 PE-Ci per segment (56 PE-Ci for Hazard Category 3), with a 20 ft. separation between segments.

In terms of the readiness of operations, I expect those safety management programs that are relied upon to assure that the intended system functional capabilities are appropriately tested, surveilled, and maintained (e.g., In-service Inspection, Test & Maintenance and Configuration Management programs) will be implemented in a rigorous and cost-effective manner. Furthermore, all TSR controls including the programmatic controls are expected to be verified for readiness using the criteria provided in the MCU BIO Application Guide prior to operation.

Once the MCU BIO has been implemented, a Readiness Review shall be conducted to demonstrate readiness prior to initiating characterization activities. The level of Readiness Review and start up authority shall be determined in accordance with site procedures or DOE O 425.1C.

If you have any questions, please call (*site contact*).